

## COMMENTARY

## Is methadone a miracle cure or an alternative evil?

The medical complications of opioid addiction were described in classic articles in 1967 by Cherubin<sup>1</sup> and Louria and colleagues.<sup>2</sup> These authors chronicled overdoses occurring commonly with respiratory arrest, endocarditis, septic emboli, pneumonia, tetanus, malaria, hepatitis and other disorders in injection drug users in New York City. They estimated that approximately 1% of those addicted to opioids died every year as the direct result of an overdose, and that in 1964 in New York City, there were nearly 400 deaths related to opioid use.<sup>1,2</sup> Although criminal behavior and the financial impact of providing medical care were not discussed, the implications of addiction became clear. Cherubin wrote of those who were addicted that “it is an element of their place in the world that they . . . have largely been ignored medically” and pleaded that “the past neglect . . . be reversed”.<sup>1</sup>

Almost simultaneously, as psychiatrists and law enforcement officials were failing to stem the tide of opioid addiction and its complications, the noted experts on metabolism, Dole and Nyswander, hypothesized that heroin addiction was a metabolic problem.<sup>3</sup> As in the treatment of other diseases, pharmacotherapy was indicated, and careful titration of methadone, a long acting opioid, was the solution. Dole and Nyswander noted that methadone replacement provides two unique effects: at low doses it offers relief from withdrawal, and at higher doses methadone blocks the euphoria associated with heroin use. Quite rapidly, federally funded methadone clinics were born. Thirty years later, over 100,000 patients are enrolled in methadone maintenance programs.

Karch and Stephens offer insight into the deaths of 38 patients on methadone maintenance who died in San Francisco. Rare infectious diseases such as necrotizing fasciitis are still common in addicts, and this finding may suggest a direct effect of opioids on the immune system. It was disappointing that cocaine use was detected in nearly half the people in whom methadone was detected and that other drugs, such as benzodiazepines, were also commonly used. However, although rigid criteria for defining deaths related to methadone were not specified, the authors identified only 21 cases in which methadone toxicity was the cause of death in 1 year in a large municipality.

Since replacing heroin with methadone fails to cure all of the problems associated with addiction, we should ask if the objectives of methadone maintenance are being met as measured by a decrease in the number of deaths caused by opioids, a reduction in the number of addicts contracting an infectious disease, and a reduction in criminal behavior.

Although there is little epidemiological data that would allow a direct comparison of mortality from methadone

with mortality from heroin, a study by Caplehorn and Drummer using a cross-sectional design showed that methadone maintenance saved more than two lives for every death related to heroin in New South Wales.<sup>4</sup> Interestingly, they noted that since most of the deaths related to methadone occurred during the first 2 weeks of treatment, enhanced monitoring of patients during this time could improve the success of the programs. Methadone maintenance was originally designed as a treatment for inpatients.

In the 1960s and 1970s the most common infectious disorders associated with injection drug use were endocarditis, hepatitis, and pneumonia.<sup>1,2</sup> Recent data show that when adequate doses of methadone are used, long term maintenance is effective in preventing infection with HIV, probably resulting from the combined effects of reduced needle sharing and counseling about safe sexual practices.<sup>5</sup> In addition, the structured environment of methadone maintenance clinics has proven to be an excellent location in which to screen for and treat tuberculosis in patients considered to be at high risk.<sup>6</sup>

Although it may be argued that the benefits of methadone maintenance are largely conferred on the individual, the prevention of criminal behavior has its greatest rewards in the community. Numerous studies show that methadone maintenance reduces criminal behavior even when participants continue to use illicit non-opioid substances.<sup>7–10</sup>

Methadone is not a miracle cure. Simply providing a long acting synthetic opioid to patients who have important social, financial, and, possibly, genetic pressures to maintain their addiction cannot be expected to prevent an overdose, the misuse of other drugs, infections, and crime. The data, however, strongly show that the benefits of methadone maintenance far outweigh its costs and risks. Previously, emphasis was placed on providing the best therapeutic dose<sup>11,12</sup>; more recent data suggest that greater benefit is derived from the structured environment and the interpersonal interactions provided during counseling.<sup>13</sup> Strong programs are needed to ensure the continued success of methadone maintenance; these programs must combine public health initiatives, patient education, job training, and social support to augment drug replacement. Only when these resources are added to the simple act of drug replacement can we gain the maximum reduction in risk from methadone maintenance.

Robert S Hoffman  
New York City Poison  
Center  
New York University  
School of Medicine  
455 First Avenue  
Room 123  
New York, NY 10016

Correspondence to:  
Dr Hoffman  
bobhoff@pol.net

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## References

- 1 Cherubin CE. The medical sequelae of narcotic addiction. *Ann Intern Med* 1967;67:23-33.

- 2 Louria DB, Hensle T, Rose J. The major medical complications of heroin addiction. *Ann Intern Med* 1967;67:1-22.
- 3 Dole VP, Nyswander ME. Heroin addiction—a metabolic disease. *Arch Intern Med* 1967;120:19-24.
- 4 Coplehorn JR, Drummer OH. Mortality associated with New South Wales methadone programs in 1994: lives lost and saved. *Med J Aust* 1999;170:104-109.
- 5 Hartel DM, Schoenbaum EE. Methadone treatment protects against HIV infection: two decades of experience in the Bronx, New York City. *Public Health Rep* 1998;113(suppl 1):107-115S.
- 6 Snyder DC, Paz EA, Mohle-Boetani JC, et al. Tuberculosis prevention in methadone maintenance clinics. Effectiveness and cost-effectiveness. *Am J Respir Crit Care Med* 1999;160:178-185.
- 7 Bell J, Mattick R, Hay A, et al. Methadone maintenance and drug-related crime. *J Subst Abuse* 1997;9:15-25.
- 8 Kang SY, De Leon G. Criminal involvement of cocaine users enrolled in a methadone treatment program. *Addiction* 1993;88:395-404.
- 9 Sechrest DK. Methadone programs and crime reduction: a comparison of New York and California addicts. *Int J Addict* 1979;14:377-400.
- 10 DeAngelis GG, McCaslin FC, Kaplan S, et al. The impact of methadone and drug-free treatment on criminal behavior. *Drug Alcohol Depend* 1976;1:399-413.
- 11 Strain EC, Stitzer ML, Liebson IA, et al. Dose-response of methadone in the treatment of opioid dependence. *Ann Intern Med* 1993;119:23-27.
- 12 Strain EC, Bigelow GE, Liebson IA, et al. Moderate- vs high-dose methadone in the treatment of opioid dependence. A randomized trial. *JAMA* 1999;281:1000-1005.
- 13 Blaney T, Craig RJ. Methadone maintenance. Does dose determine differences in outcome? *J Subst Abuse Treat* 1999;16:221-228.

## Risk of hepatitis B infection among young injection drug users in San Francisco: opportunities for intervention

**ABSTRACT** ● **Objective** To compare the demographic characteristics and risk behaviors for hepatitis B infection among injection drug users younger than 30 years with those aged 30 or older and to evaluate participants' knowledge, attitudes, and experiences of infection, screening, and vaccination against hepatitis B virus. ● **Design** A systematic sample of injection drug users not currently in a treatment program were recruited and interviewed at needle exchange programs and community sites. ● **Participants** 135 injection drug users younger than 30 years and 96 injection drug users aged 30 or older. ● **Results** Injection drug users younger than 30 were twice as likely as drug users aged 30 or older to report having shared needles in the past 30 days (36/135 [27%] vs 12/96 [13%]). Injection drug users younger than 30 were also twice as likely to report having had more than two sexual partners in the past 6 months (80/135 [59%] vs 29/96 [30%]). Although 88 of 135 (68%) young injection drug users reported having had contact with medical providers within the past 6 months only 13 of 135 (10%) had completed the hepatitis B vaccine series and only 16 of (13%) perceived themselves as being at high risk of becoming infected with the virus. ● **Conclusion** Few young injection drug users have been immunized even though they have more frequent contact with medical providers and are at a higher risk for new hepatitis B infection than older drug users. Clinicians caring for young injection drug users and others at high risk of infection should provide education, screening, and vaccination to reduce an important source of hepatitis B infection.

### INTRODUCTION

Between 200,000 and 300,000 people become infected with hepatitis B virus in the United States each year, and about 4000 to 5000 people die from cirrhosis and hepatocellular carcinoma.<sup>1-3</sup> About 20% of these infections occur among injection drug users, mainly through the sharing of contaminated injection equipment and unprotected sexual contact. Over 80% of injection drug users who have been injecting for longer than 10 years are infected with hepatitis B virus.<sup>3,4</sup> The risk of becoming infected with the virus is highest during the first years of injecting; within 1 to 5 years of starting to inject drugs, 50% of drug users may already have been infected.<sup>4</sup> About 6% to 10% of injection drug users who are infected with hepatitis B virus become chronic active carriers who may

infect others; they may also develop end stage liver disease.<sup>1,4</sup>

When hepatitis B vaccine was introduced in 1982, the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices recommended that groups at high risk of infection should be vaccinated; those defined as being at high risk were injecting drug users and those who have more than two sexual partners in 6 months.<sup>5, 6</sup> However, the incidence of hepatitis B infection among injection drug users increased by 80% between 1982 and 1990 because targeted vaccination programs were never implemented, largely due to the perceived difficulty of ensuring that high risk groups completed to the vaccine series.<sup>1,4,7-10</sup> In 1991 and again in 1995, the Centers for Disease Control called for the

Karen H Seal  
Brian R Edlin  
Urban Health Study,  
UCSF  
3180 18<sup>th</sup> Street,  
Suite 302  
San Francisco, CA  
94110

Kristen C Ochoa  
Jacqueline P Tulskey  
Andrew R Moss  
Judith A Hahn  
Department of  
Epidemiology  
San Francisco General  
Hospital  
995 Potrero Avenue  
San Francisco, CA  
94110

Correspondence to:

Karen H Seal  
karene@itsa.ucsf.edu

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Epidemiology and  
Biostatistics, San  
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Hospital, and the  
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San Francisco

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